DISCUSSION

RESEARCH ACTIVITY AND THE QUALITY OF TEACHING IN MEDICAL SCHOOLS[1]

A RECENT study demonstrated a great variation in the degree to which various British and American journals were quoted in the medical sciences.[2] Taking this as a basis, the various medical schools were distributed according to the number of publications in the thirty-six most quoted United States medical journals during the two-year period from March, 1932, to March, 1934 (Table I). Independent hospitals and research institutions were not listed for this study. Harvard and Johns Hopkins were the leaders in 1932 to 1934 with 677 and 454 publications in the most quoted journals. At the other end of the list were three schools with no publications during the two-year period in the thirty-six most quoted journals.

TABLE I

NUMBER OF PAPERS PUBLISHED IN THE 36 MOST QUOTED MEDICAL JOURNALS DURING THE 2-YEAR PERIOD FROM MARCH, 1932, TO MARCH, 1934, DISTRIBUTED ACCORDING TO MEDICAL SCHOOLS (INDEPENDENT HOSPITALS AND RESEARCH FOUNDATIONS NOT LISTED)

1. Harvard	677	38. S. California	26
2. Johns Hopkins	454	39. George Wash.	26
3. Columbia	448	40. Arkansas	26
4. Chicago	421	41. Loyola	25
5. Yale	359	42. Missouri	24
6. California	351	43. Syracuse	24
7. Pennsylvania	334	44. Indiana	22
8. Northwestern	269	45. Georgetown	21
9. Illinois	262	46. Long Island	20
10. Washington	257	47. Temple	20
11. Minnesota	248	48. Tennessee	19
12. Cornell	222	49. Emory	19
13. Michigan	212	50. Oklahoma	18
14. Wisconsin	208	51. Alabama	17
15. Stanford	188	52. Med. Col. Va.	17
16. Western Reserve	187	53. S. Carolina	17
17. New York University	166	54. Louisville	17
18. Rochester	150	55. Albany	15
19. Iowa	140	56. N. Y. Homeop.	15
20. Tulane	106	57. L. S. U.	14
21. Vanderbilt	89	58. West Virginia	14
22. Oregon	60	59. N. Carolina	12
23. Virginia	76	60. Marquette	11
24. Cincinnati	73	61. Baylor	10
25. St. Louis	52	62. Creighton	9
26. Ohio State	49	63. Vermont	8
27. Tufts	49	64. Georgia	7
28. Pittsburgh	46	65. Wayne	7
29. Boston U.	46	66. Utah	4
30. Nebraska	45	67. Howard University	3
31. Buffalo	44	68. Dartmouth	3
32. Duke	39	69. Med. Evan.	2
33. Texas	39	70. Mississippi	2
34. Kansas	38	71. Woman's M. C.	1
35. Jefferson	37	72. Wake Forrest	0
36. Maryland	32	73. Hahnemann	0
37. Colorado	31	74. Meharry	0

It was decided to see if there was any correlation between the research activity in the various schools and the quality of teaching. This latter could of course be estimated by waiting 15 or 20 years and then analyzing the records of the graduates of the various schools. An alternative was to study the state board statistics as published in the various issues of the *Journal* of the American Medical Association. This, it was hoped, would give some estimate of the immediate efficacy of the teaching. It would perhaps not be fair to schools whose faculties are largely research faculties and whose teaching is on a graduate basis. The students of such schools might be expected to do poorly on state board examinations and yet improve in later years due to excellent reading habits usually fostered in such institutions.

MATERIALS AND METHODS

The state board results for all states for 1931, 1932, 1934, 1935 and 1936 (approximately the years covered in the study of research activity) were taken from weekly issues of the *Journal* of the American Medical Association. Several issues for the year 1933 were missing and the year 1936 was substituted. It was found that no states except Massachusetts and New York reported failures over the five-year period for local graduates which exceeded 3 per cent. Consequently, the results for local graduates were eliminated for all states.

TABLE II

THE RELATIONSHIP BETWEEN THE PERCENTAGE OF FAILURES IN STATE BOARD EXAMINATIONS AND THE SCIENTIFIC OUTPUT OF THE FACULTY (15 SCHOOLS WITH 200 OR MORE CANDIDATES IN FOREIGN STATE BOARDS)

	State Boards			Faculty Publications		
	Candidates	Failures	Per cent.	Teachers	Papers	Annual Rate
1. Harvard	276	3	1.1	459	677	74
2. Pennsylvania	354	11	3.1	365	334	45
3. Chicago-Rush	507	18	3.6	504	421	41
4. Northwestern	455	8	1.8	402	269	33
5. Tulane	287	7	2.4	157	106	33
6. Maryland	238	8	3.4	233	32	7
7. George Wash.	266	15	5.6	164	26	8
8. Jefferson	362	21	5.8	248	37	7.5
9. Creighton	244	16	6.6	122	9	4
10. Hahnemann	287	19	6.6	183	2	0.5
11. St. Louis	246	22	8.9	304	5	8.5
12. Tufts	265	28	10.5	285	49	6.8
13. Howard	276	33	12.0	103	3	1.5
14. Georgetown	619	115	18.5	210	21	5
15. Loyola	254	53	20.9	267	25	4.7

Of the 8,954 candidates thus studied, 620 failed, an average of 6.9 per cent. when the local state results

[1] From the Departments of Pathology and Bacteriology, Louisiana State University and St. Louis University Schools of Medicine.

[2] Albert E. Casey, "Influence of Individual North American and British Journals on Medical Progress in the United States and Britain" (in press).

were eliminated. Three hundred and twenty-nine of the failures were in New York and Massachusetts. The remaining 291 failures were in other states, giving averages of 19.9 per cent. for the former and 4.0 per cent. for the latter states. With an average failure of 7 per hundred candidates, it was necessary to have a sample of 200 candidates for statistical analysis. Only 15 schools had as many as 200 candidates examined by other than the local state boards. The 15 schools were listed in the order of their percentage failures on state boards, alongside of the number of papers published in the thirty-six most quoted medical journals for the period March, 1932, to March, 1934 (Table II). It will be seen that a very high inverse correlation existed between the percentage of failures of the students on state board examinations and the publications of the faculty in leading national journals (Fig. 1). There was no correlation between the

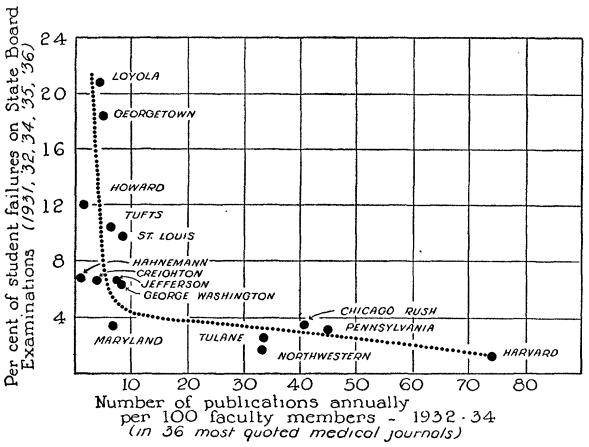

FIG. 1

number of faculty members and the failures on state boards or between the number of faculty members and the scientific output. Less than 20 publications for 100 faculty members in the 36 leading medical journals should be a clear warning to school authorities that all is not well in their school and drastic changes should be instituted. The medical schools in the various state universities generally did not supply a sufficient number of candidates for analysis. Most students from such state schools reside in the state of graduation and are not as likely to take out-of-state medical board examinations. Sufficient time has elapsed so that the standing of the schools to-day need not necessarily be that of 1934. It is believed that the high inverse correlation between the research activity of the faculty and the failures of the students on state boards should be brought to the attention of faculties and administrators.

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ON THE ORIGIN OF THE DOMESTICATION OF THE DOG

EVIDENCE of the domestication of the dog reaches as far back as the Neolithic. In the early Neolithic period the skeletons of dogs are found outside the limits of human habitation sites. In Danish kitchen middens of the Maglemosian phase of culture such skeletons have been found in appreciable numbers within the habitation sites.

Students of the subject have for long been puzzled to find a satisfactory explanation for the original motive or motives which led to the domestication of the dog. It is likely that different motives may have been operative in different human groups. All people are fond of the young of wild animals, and it may well be that this fondness led to the making of a pet out of the puppy of the wild dog, and thus to the domestication of this eminently domesticable animal. An examination, however, of the role played by the dog in different human groups at different levels of cultural development shows that the "pet" motive is not characteristic of all of them, whereas the motive of *use* is. Furthermore, the motive of *use* applies to all domesticated animals, even to the cat, which catches mice, rats, birds and other animals which are likely to be a nuisance. The keeping of pets merely as pets is probably a relatively recent development of civilization.

Of what use then could the dog have been to the men who first domesticated him? The evidence suggests that his first and primary use originally was as a scavenger. The earliest human groups were food-gatherers and hunters, with no agriculture or domestic animals of any sort. Living a semi-nomadic existence in search of food they would occupy a site until the food supply was dangerously diminished, whereupon they would move to another area where food was more abundant. At each of their camps or settlements they would throw the remains of their meals into heaps which often assumed considerable dimensions, depending upon the length of their stay and the numbers in the group. The odor from these middens must often have been quite overpowering. Hence, when it was discovered that the dog was a willing consumer of the left-overs from "kitchen" and "table," who would thus effectively serve to eliminate the intolerable odors which blew in from the refuse heaps, his assistance was permanently enlisted in this worthy task.

This explanation derives some support from the disposition of the skeletal remains of dogs in relation to the kitchen middens and the prehistoric settlements of Europe. But far stronger evidence for this explanation is to be found in the conditions existing among people of a Stone Age culture of to-day. I refer to the Australian aborigines.